

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Clean Harbors of Braintree, Inc.
Facility Address: P.O. Box 859048, 385 Quincy Ave., Braintree, MA 02184
Facility EPA ID #: MAD053452637

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

XX If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near term objectives, which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).



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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	yes			See Below
Air (indoors) ²		no		
Soil (surface, e.g., <2 ft)	yes			1,1-DCE, PCE, TCE, TCA, total 1,2-DCE, ethylbenzene, acetone, toluene, xylenes, 1,2,4-trichlorobenzene, bis(2-ethylhexyl)phthalate, 2-methyl-naphthalene, naphthalene, Aroclor 1016, Aroclor 1248, arsenic, barium, cadmium, nickel, lead, copper, chromium and zinc.
Surface Water	yes			chromium, copper, lead, mercury, zinc, arsenic, barium, beryllium, BTEX, MTBE, naphthalene, 2-methylnaphthalene, phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, chromium, lead, and zinc
Sediment	yes			Methylene chloride, 1,1,1-trichloroethane, phenanthrene, di-n-butylphthalate, fluoranthene, pyrene, benzo(a)fluoranthene, chrysene, arsenic, barium, beryllium, chromium, copper, lead, mercury, nickel, and zinc
Soil (subsurface e.g., >2 ft)	yes			1,1-DCE, PCE, TCE, TCA, total 1,2-DCE, ethylbenzene, acetone, toluene, xylenes, 1,2,4-trichlorobenzene, bis(2-ethylhexyl)phthalate, 2-methyl-naphthalene, naphthalene, Aroclor 1016, Aroclor 1248, arsenic, barium, cadmium, nickel, lead, copper, chromium and zinc.
Air (outdoors)		no		

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

XXX If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Clean Harbors of Braintree, Inc., (CHBI) is a RCRA-licensed hazardous waste treatment, storage and disposal (TSD) facility located on Hill Avenue (formerly 385 Quincy Avenue), in Braintree, Massachusetts. The site is located in an industrial area and is bordered to the east and south by a tank farm owned by Citgo and used to store bulk petroleum. The former General Dynamics Shipyard abuts the property to the north. The site is bordered to the west by property now or formerly owned by General Dynamics, with an automobile scrap yard owned by Flibotte Auto Salvage, located to the west beyond the General Dynamics property. The Weymouth Fore River is located north and east of the site beyond the former General Dynamics Shipyard and Citgo properties.

In a letter dated October 7, 1992, the EPA approved the RFI Phase I Interim Report. The EPA stated in its letter that approval of the RFI Phase II Proposal and implementation of Phase II activities would be deferred. The EPA requested CHBI to investigate the feasibility of site stabilization and to prepare a "Site Stabilization Conceptual Report" describing site conditions and remedial actions that could potentially be undertaken to stabilize historical releases at the site.

In October 1989, CHBI and the U.S. Environmental Protection Agency (EPA) entered into a RCRA Section 3008(h) Consent Order. In March of 1994, CHBI and EPA executed a Modification to the Consent Order to address site stabilization activities. The modified Consent Order addressed stabilization measures for the following areas that were identified in the Site Stabilization Conceptual Report to stabilize historical release at the site:

- Contaminated soils in AOC 5 (a former reported leach field);
- Contaminated soils in AOC 7 (a former disposal area used by a prior owner of the CHBI site for unwanted petroleum distillation fractions);
- Impacted groundwater migrating off-site of the northern property boundary;
- Groundwater seeps near monitoring well CHI-10 and in the basement of Building 2; and
- Stormwater which historically ponded in the northeast corner of the property.

Currently, access to the CHBI facility is restricted limiting the potential for human exposure.

Groundwater:

VOCs	GW-2 ug/l	10XGW-2 ug/l
Dichlorodifluoromethane	100000	1000000
Vinyl Chloride	2000	20000
Chloromethane	10000	100000
Bromomethane	2	20
Chloroethane	10000	100000
Trichlorofluoromethane	100000	1000000
Acrolein	1000	10000
Acetone	50000	500000
1,1-Dichloroethylene	1	10
Iodomethane	10000	100000

Carbon Disulfide	10000	100000
Methylene Chloride	50000	500000
Acrylonitrile	10000	100000
Methyl Tert-Butyl Ether	50000	500000
Trans-1,2-dichloroethylene	20000	200000
1,1-Dichloroethane	9000	90000
2-Butanone	50000	500000
2,2-Dichloropropane	9	90
Cis-1,2-dichloroethylene	20000	200000
Chloroform	40	400
Bromochloromethane	10	100
1,1,1-Trichloroethane	4000	40000

1,1-Dichloropropene	5	50
Carbon Tetrachloride	20	200
Benzene	2000	20000
1,2-Dichloroethane	20	200
Trichloroethylene (Trichloroethene)	30	300
1,2-Dichloropropane	9	90
4-Methyl-2-Pentanone	50000	500000
Cis-1,3-Dichloropropene	5	50
Toluene	5000	50000
Trans-1,3-dichloropropene	5	50
Bromodichloromethane	50000	500000
1,1,2-Trichloroethane	20000	200000
1,2-Dibromoethane	3	30
2-Hexanone	10000	100000
1,3-Dichloropropane	50000	500000
Tetrachloroethene	3000	30000
Dibromochloromethane	100	1000
Chlorobenzene	500	5000
1,1,1,2-Tetrachloroethane	6	60
Ethylbenzene	4000	40000
Total Xylenes	6000	60000
Styrene	900	9000
Bromoform	800	8000
Isopropylbenzene	100000	1000000

1,1,2,2-Tetrachloroethane	20	200
1,2,3-Trichloropropane	10000	100000
N-Propylbenzene	10000	100000
Bromobenzene	10000	100000
2-Chlorotoluene	10000	100000
1,3,5-Trimethylbenzene	1000	10000
4-Chlorotoluene	10000	100000
Tert-Butylbenzene	10000	100000
1,2,4-Trimethylbenzene	100000	1000000
Sec-Butylbenzene	**	**
4-Isopropyltoluene	10000	100000
1,3-Dichlorobenzene	8000	80000
1,4-Dichlorobenzene	5	50
N-Butylbenzene	**	**
1,2-Dichlorobenzene	8000	80000
1,2-Dibromo-3- Chloropropane	1000	10000
1,2,4-Trichlorobenzene	500	5000
Hexachlorobutadiene	0.6	6
Diethyl ether	10000	100000
Tetrahydrofuran	50000	500000
Naphthalene	6000	60000
1,2,3-Trichlorobenzene	**	**
Dibromomethane	50000	500000

Soil

Contaminants	Soil Category S-3 Std (ppm)
Methylene Chloride	
1,1-Dichloroethene	9
1,1-Dichloroethane	2000
t-1,2- Dichloroethene	1000
1,1,1- Trichloroethane	500
Trichloroethylene	100
Benzene	5000
1,1,2,2- Trichloroethane	2
Tetrachloroethylene	100
Toluene	100
Ethyl benzene	500
Acetone	60
Xylenes	2500

Surface Water

Seeps Metals	GW-3
Chromium	5000
Copper	
Lead	600
Mercury	60
Zinc	5000

Sediment

Contaminant	MA DEP TEC Sediment Screening Guidelines (mg/kg)
Methylene Chloride	---
1,1,1-trichloroethane	---
Phenanthrene	0.560
Di-n-butylphthalate	---
Flouranthene	0.750
Pyrene	0.490
Benofluoranthene	---
Chrysene	0.340
Arsenic	6
Barium	---
Beryllium	---
chromium	26
Lead	31
Mercury	0.2
Nickel	16
zinc	120

Reference:

RCRA Facility Investigation Phase I, January 1992.
RCRA Facility Investigation Phase II, July 1999.
Stabilization Measures Completion Report, May 1999.
Progress Report for March and April 2003, May 2003.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Contaminated Media	Potential Human Receptors (Under Current Conditions)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	NO	NO	NO	YES	NO	NO	NO
Air (indoors)	NO	NO	NO	NO	NO	NO	NO
Soil (surface, e.g., <2 ft)	NO	NO	NO	YES	NO	NO	NO
Surface Water	NO	YES	NO	YES	NO	NO	NO
Sediment	NO	NO	NO	NO	NO	NO	NO
Soil (subsurface e.g., >2 ft)	NO	NO	NO	YES	NO	NO	NO
Air (outdoors)	NO	NO	NO	NO	NO	NO	NO

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media – Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

XXX If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

Workers and Construction are the only two categories identified for the potential of a complete human exposure pathway.

Groundwater – See CA 750

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Soil

AOC 1 – Building 4

Four borings were advanced to refusal in this area. Two of the borings were located on the northern side of building 4 and the other two were located in the basement of the building. Field screening results from headspace analyses were generally less than 50 ppm above background in soil samples collected from the northern portion of the building and were greater than 1,000 ppm above background in samples collected from beneath the building. Primary constituents detected were chlorinated compounds including PCE, TCE, TCA, and total 1,2-DCE. Semi-VOCs were detected at 40.8 ppm in one sample collected for analysis. Detected compounds were 1,2,4-trichlorobenzene and bis(2-ethylhexyl)phthalate. Elevated levels of arsenic, barium, cadmium, nickel, lead, copper, chromium and zinc were also found to be present in samples submitted from this area. Levels ranged from 14 ppm to 4100 ppm. The highest samples were collected from those taken from beneath the building. PCBs were also present in three soil samples submitted. Aroclor was detected at 1.3 ppm, 86 ppm, and 21 ppm.

AOC 3 – Building 5

Two borings were advanced inside the building. Concrete was cored from the floor of the building to advance the borings with a tripod rig. Field screening results from headspace analyses from this area were less than 10 ppm above background. Laboratory TVOC concentrations were 178 ppb to 43 ppb and consisted of 1,1-DCE, TCA, TCE, PCE, ethylbenzene, acetone and toluene.

AOC 4- Tank Dike Area

Field screening of soils collected from borings were typically less than 15 ppm., however screening of samples from boring AOC4-3 ranged from 28 to 580 ppm above background. Laboratory results of TVOC concentrations from samples ranged from 1540 ppb to 18200 ppb. Primary constituents detected in samples collected from this area were TCA, TCE, PCE, toluene, and xylenes. Metal analysis results indicated concentrations of chromium (44.4 ppm), copper (61.9 ppm), lead (29.7 ppm), nickel (51.5 ppm) and zinc (105 ppm). PCB Aroclor 1016 was detected in samples and ranged in concentration from 11 ppm to 510 ppm.

AOC 5 – Reported Leach Field Area

Field screening results from headspace analyses of samples collected from this AOC (210 ppm to greater than 1000 ppm above background) typically indicated high levels of VOCs. Part per million levels of chlorinated solvents and aromatic hydrocarbons were found in most soil samples from this area. TVOC concentrations in these samples ranged from approx. 20 to 98 ppm. Primary VOCs reported present included 1,1-DCE, 1,2-dichloroethane, total 1,2-DCE, TCA, TCE, PCE, Toluene, ethylbenzene, and xylenes. 2-methyl naphthalene and naphthalene, were also found present at levels ranging from 8.5 to 19 ppm. PCBs were detected in both samples submitted. Reported PCB concentrations of Aroclor 1016 ranged from 2.3 to 10 ppm. Other Aroclor were not detected.

AOC 6 – Tank Storage Area

Results of field headspace screening of soil samples collected ranged from 300 ppm to greater than 1000 ppm above background. TVOC results from soil samples submitted to the laboratory were generally less than 3 ppm. The VOC constituents reported were primarily aromatic compounds. One Semi VOC was detected. Results of metal analysis indicated the presence of zinc, lead, copper, barium, and chromium at levels ranging from 7 ppm to 69 ppm.

AOC 7 – Field screening results of samples collected from this AOC ranged from background levels to 230 ppm. The highest field screening results were observed in samples collected from the clay silt layer. The TVOC concentration was reported at 90 ppb. Semi-VOCs and PCB compounds were not detected with the

exception of 2-methylnaphthalene. Lead and zinc were detected in soil collected from this area at concentrations of 50 and 120 ppm.

AOC 9 – Former Tank Farms

Area 4A VOC concentrations results from headspace analysis were less than 1 ppm above background in unsaturated soil samples collected from this area. These results generally correlated with laboratory analysis of VOCs. Metals analysis indicated elevated levels of primary lead (5ppm to 430 ppm) and zinc (39 ppm to 97 ppm).

Area 4B field screening results of headspace analysis performed on soil samples collected were observed to be less than 1 ppm above background.

Area 4C field screening results ranged from 1 to 250 ppm above background. Laboratory concentrations detected in soil samples collected from this AOC ranged from trace amounts to 72 ppb and consisted of primarily PCE, TCE, TCA, and Methylene chloride. PCB Aroclor 1248 and 1260 were detected at 5.8 and 2.4 ppm in sample AOC9-4C-1-1B). Metals were observed at elevated levels in soil samples. The primary constituents included lead (70 to 97 ppm), copper (57 to 100 ppm) and zinc (200 to 234 ppm).

Area 4D field screening of VOCs in soil samples typically ranged from 115 ppm to 900 ppm above background. Aroclor 1016 and Aroclor 1260 were found present at 1.0 ppm and 0.2 ppm. Elevated concentrations of metals detected in one of the two samples included zinc (260 ppm).

AOC 10 – Area 5

Field screening results of soil collected from boring AOC 10-1 was highest in saturated samples (150 to 200 ppm). Similar results (80 ppm to 100 ppm) were reported in samples collected from boring AOC10-2. A TVOC concentration of 560 ppb was reported in a sample collected from boring AOC10-1 and primarily consisted of ethylbenzene and benzene compounds. Only PCE was reported in a sample collected from boring AOC10-2 at a concentration of 46 ppb.

AOC 11 – Former Sweater Building

Field screening of soil samples collected from this area were generally 5 ppm above background or less. However, one sample from boring AOC11-2 at the depth interval of 4 to 6 ft bgs exhibited a response of 380 ppm VOCs. The laboratory analysis of this sample did not indicate the presence of VOCs with the exception of a trace of 2-butanone. A trace of trichloroethene was detected in surface soil sample from boring AOC-11-1.

AOC 12 – Poly Drum Shredding Unit

Field screening results of collected soil samples from AOC 12-1 were found to range from 150 ppm to 450 ppm above background. Laboratory results indicated the presence of aromatic compounds, xylenes and ethylbenzene at a TVOC concentration of approximately 3100 ppb. Chlorinated compounds were not found in samples.

AOC 13 – TCA spill area

Field screening or unsaturated soil samples were generally less than 1 ppm above background. Field screening results of saturated soils collected from borings ranged from 300 ppm to 1000 ppm above background. VOCs were detected in one saturated sample with a TVOC of 1.1 ppm. Traces of TCA and 2-butanone were also indicated. Aroclor 1016 and 1260 were found in one sample at 0.4 ppm and 0.8 ppm.

AOC 14 – Area 6

Field screening of VOCs in soil samples collected from borings typically ranged from 100 ppm to greater than 1000 ppm above background. The highest screening results were detected in samples collected from boring AOC14-4. Laboratory results of VOCs indicated aromatic compounds were primarily detected in samples collected from borings advanced in southern sections of the site at concentrations that ranged from 280 ppm to 3700ppb. In addition, relatively low levels of TCA, TCE, and PCE were detected. Naphthalene and 2-methylnaphthalene were detected at 3,300 ppb to 3,600 ppb. Other compounds were identified that are typically associated with petroleum products. Elevated levels of lead (220 ppm), zinc (370), and copper (1,000 ppm) were detected in a sample.

Surface Water – Seeps

TCL VOCs, PCBs, organochlorine pesticides metals and cyanide were not detected in surface water samples collected from the sampling locations in the Weymouth Fore River. Di-n-butylphthalate was detected at low levels (less than 10 ppb at the sampling locations. Groundwater seeps were observed consistently in several areas of the site following significant precipitation events. Temporal surface water and seep samples were analyzed for TCL parameters, including VOCs, Semi-VOCs, PCBs, metals, and cyanide. Analytical results for the seep sample collected from a location within AOC 6, detected chromium, copper, lead, mercury, zinc, arsenic, barium, and beryllium. Data collected from samples near CHI-10 indicated the presence of VOCs totaling 45,260 ppb. BTEX and MTBE compounds were the primary VOCs detected in the sample. Semi-VOCs included naphthalene, 2-methylnaphthalene, phenol, 2-methylphenol, 4-methylphenol, and 2,4-dimethylphenol were also detected in this sample at a total concentration of 552 ppb. PCB and cyanide were not detected. Concentrations of chromium, lead, and zinc were detected at or slightly above MDLs for these compounds.

Sediments

Sediment samples were collected from the Weymouth Fore River at near-shore points upstream of, adjacent to, and downstream of the nearest portion of the site. EPA personnel were present during sampling and collected split samples from a subset of the samples collected during the program. VOCs were not detected in sediment samples collected with the exception of Methylene chloride, and 1,1,1-trichloroethane, which were reported at trace concentrations. Semi VOCs were detected at or slightly above MDLs in sediment samples. These compounds included phenanthrene, di-n-butylphthalate, fluoranthene, pyrene, benzo(a)fluoranthene, and chrysene. Results of metals analysis indicated arsenic, barium, beryllium, chromium, copper, lead, mercury, nickel, and zinc.

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

XXX If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

As mentioned previously, the site does have restricted access. Workers and construction are the only two potential human receptors, under current conditions, that there is an exposure pathway identified. Complete exposure pathways for soil and groundwater in regards to potential human receptors for residents, day-care, trespassers, and recreation are not reasonably expected for the following reasons:

- The site is situated in an industrial parkway (zoned industrial) with no residences nearby;
- There is no residential use of the site property;
- Surface soil samples do not pose a risk to human health;
- Day-care, recreation, and food production are not a potential uses of the property.
- Trespassing is not reasonably expected to occur.

Construction workers could potentially be exposed to groundwater and subsurface soils if any type of subsurface excavation/construction was done on site. Currently, there is no such construction occurring onsite, however, in the event of such activity, the use of personal protective equipment would minimize any possible exposure. Attached is a portion of CHBI’s Hazard Communication Guidelines. Listed below are additional measures that have been put into place to ensure that any exposure to workers and construction workers will not be reasonably expected to be significant.

Groundwater

See CA 750

⁴ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

Soil

As part of the stabilization plan an assessment of potential risk to human health resulting from direct contact with impacted soils in AOC 5 and AOC 7 by workers at the CHBI facility. The risk evaluation was conducted by for COCs (i.e., VOCs, PAHs, metals, and PCBs) detected in site soils. It was determined, upon completion of the evaluation, that if capped with asphalt, soils in AOC 5 and 7 do not pose an unacceptable risk to human health. Paving on AOC 5 was completed on October 28, 1998 and pavement currently exists over AOC 7.

Surface Water - Seeps

There are six (6) temporal seeps that will be investigated as part of the RCRA Facility Investigation Phase II work plan. Questions have been raised as to what temporary activities can be done to ensure Current Human Exposure is under control until the RFI investigation is completed. After review of the seeps with facility personnel, the following precautions were implemented:

Seep 1: Seep 1 is located between a bedrock outcrop and the gravel driveway outside the facility fence line. Since this seep has the greatest possibility for public access, Clean Harbors placed snow fence around the seep area and posted warning signs.

Seep 2: Seep 2 is located inside the facility fence along the western edge of the facility. The seep expresses itself at multiple locations. One of the locations is in the middle of the paved driveway. Snow fencing would be extremely difficult as this is the primary truck route in the facility so it is not recommended that snow fence be used at this seep. All personnel working in this area wear basic personal protective equipment consisting of hard hats, safety glasses, and steel toed boots. The employees are 40 - hour OSHA trained and participate in the Clean Harbors' Hazard Communication Program. The facility will continue with the site specific hazard communication training, offered 1 hour every month, providing adequate protection to potential human exposure.

Seeps 3 & 4: Seeps 3 & 4 are located in the middle of the driveway near the Building 4 loading dock. As with Seep 2, Clean Harbors will continue with site specific hazard communication training to provide adequate protection to human exposure.

Seep 5: Seep 5 is on the eastern fence line near an emergency exit gate. Due to the need to keep the emergency exit clear, snow fencing is not appropriate for this location. Signs and training are used to control exposure at this location.

Seep 6: Seep six runs along the western side of building 2. The area is cordoned off with snow fence except for an elevated sidewalk that connects to the emergency egress from a laboratory in building 2.

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5 Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

XXX If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s):

**Current Human Exposures Under Control
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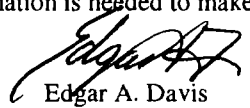
6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

XXX YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Clean Harbors, Braintree, Inc. facility, EPA ID # MAD053452637, located at 385 Quincy Ave., Braintree, MA under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

___ NO - "Current Human Exposures" are NOT "Under Control."

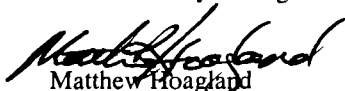
___ IN - More information is needed to make a determination.

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Edgar A. Davis
RCRA Facility Manager

Date Aug 18, 2005

Supervisor (signature)
(print)
(title)
(EPA Region)


Matthew Hoagland
Section Chief, RCRA CA Program
Region I - New England Office

Date 9/26/05

Locations where References may be found:

United States Environmental Protection Agency - Region I
RCRA Files
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Contact telephone and e-mail numbers

Name: Edgar A. Davis
Phone: 617-918-1379
E-mail: davis.edgar@epa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.



HAZARD COMMUNICATION GUIDELINES

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APPROVED

CHIEF OPERATING OFFICER

Signature

Date

GENERAL COUNSEL

Signature

Date

SR. VICE PRESIDENT, COMPLIANCE & REGULATORY AFFAIRS

Signature

Date



HAZARD COMMUNICATION GUIDELINES

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9. OUTSIDE CONTRACTORS

All outside contractors and their employees working in our CHES' plants or on CHES-controlled project sites who may be exposed to hazardous chemicals (including waste) while on our premises, must be informed of our Hazard Communication Program, our labeling system, and of the hazardous chemicals their employees may encounter while working in a CHES facility or operation.

This program is intended to cover personnel other than CHES employees who are not accompanied by our own trained personnel, and who may come into contact with a hazardous chemical.

Also refer to Process Safety requirements where those guidelines and procedures are implemented. See CHES' Process Safety Management Program.

9.1. Requirements

- 9.1.1. CHES area supervisors, foremen, or designated operations management personnel (Responsible CHES contact) to whom the contractor will report, will notify Health and Safety of all outside contractors on the premises.
- 9.1.2. The CHES contact will review the work to be performed and determine any hazardous chemicals to which the contractor's employee may be exposed.
- 9.1.3. The CHES Contact will provide to the contractors a list of hazardous chemicals the employee(s) may be exposed to and copies of corresponding Material Safety Data Sheets.
- 9.1.4. The CHES Contact will inform the contractor's representative that precautionary measures for use when handling hazardous materials are contained in the MSDS or other appropriate documents. If emergency situations are anticipated (foreseeable emergencies), the Program Coordinator will notify the contractor's representative.
- 9.1.5. The CHES Contact will inform each contractor of the labeling system used in the location of the contractor's work. The contractor will be provided with an explanation of the labeling system and all available handout materials.
- 9.1.6. The CHES contact will document and obtain the contractor's representative's signature on a documentation form. (See Appendix I or its equivalent). **CONTRACTORS WILL NOT BE ALLOWED TO BEGIN WORK UNTIL THE FORM IS COMPLETED.**
- 9.1.7. These records are to be submitted to Health and Safety when complete and are to be retained permanently.



APPENDIX 1: Contractor HCP Notification Form

CONTRACTOR (or other):

Contractor Representative:

Contract Number:

Work to be performed:

Date(s) work is to be performed:

This is to inform you that CHES has implemented a Hazard Communication Program in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200). Details of the program are available for review.

It is the responsibility of the contractor to ensure that the contractor's employees receive the proper training. You and your employee may encounter the following chemicals in our facility while in your work area: (Attach separate list if necessary).

☐ MSDS provided
☐ Labeling system explained
☐ Precautionary Measures Discussed:

☐ Normal Operations
☐ Foreseeable Emergencies

Appropriate precautionary measures will be found on the attached MSDSs. (Attach appropriate MSDSs)

Additional information and material are available upon request. Please contact CHES' Hazard Communications Coordinator.

Date

Contractor Representative

Title

HCP Form 3